G. N. SAEGMULLER.

Leveling Device for Surveying Instruments.

No. 212,405. Patented Feb. 18, 1879.

Fig. 1.

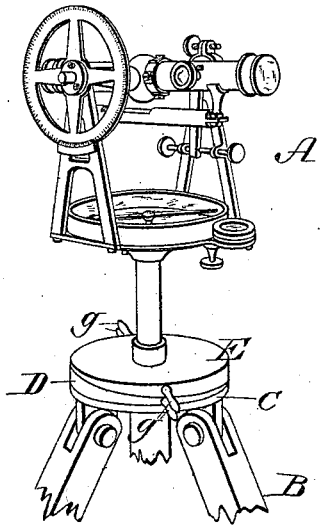
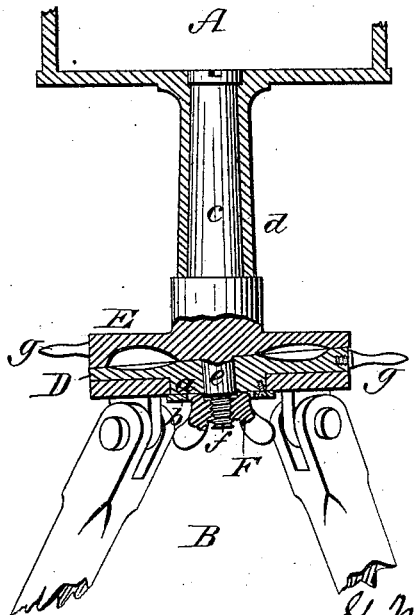


Fig. 2.



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UNITED STATES PATENT OFFICE.

GEORGE N. SAEGMULLER, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN LEVELING DEVICES FOR SURVEYING-INSTRUMENTS.

Specification forming part of Letters Patent No. **212,405**, dated February 18, 1879; application filed December 31, 1878.

To all whom it may concern:

Be it known that I, GEORGE N. SAEGMULLER, of Washington, in the county of Washington and District of Columbia, have invented certain Improvements in Leveling Devices for Surveying-Instruments, &c., of which the following is a specification:

My invention consists in the employment, in connection with a surveying or like instrument, of two beveled disks, mounted and free to rotate one upon the other and upon a bed or support, for the purpose of leveling or adjusting the instrument.

It further consists in a clamping device, and in details of construction hereinafter explained.

In the accompanying drawings, Figure 1 represents an instrument provided with my improved device, and Fig. 2 a vertical central section of said device.

Hitherto it has been customary to employ a number of vertical screw-stems for the purpose of adjusting instruments of this class upon their supporting-beds, and one or more clamping-screws to lock or clamp the instrument in position when adjusted. It is found, in practice, that considerable time is required for the accurate adjustment of an instrument by such means, and also that the clamping-screws, as commonly arranged, bearing at one side of the vertical center of the instrument, frequently destroy the accuracy of the adjustment when they are turned to clamp the instrument.

It is to provide a simple and expeditious means of adjustment, and one not liable to disarrangement by the operation of clamping the instrument, that constitutes the object of my invention; and to this end it consists in interposing between the instrument and its bed or support two or more disks having inclined or beveled faces.

In the accompanying drawings, A represents a surveyor's transit, which I have taken for illustration, supported upon a tripod, B, which latter is formed, as usual, with a horizontal bed or plate, C. Upon this bed C is mounted a disk or plate, D, the upper face of which is inclined or beveled, as shown, and the lower face of which is formed with a neck, *a*, of circular form, extending downward through the bed-plate C, and furnished with an annular plate or ring, *b*, which overlaps the opening in the bed, and, while permitting the free rotation of the disk, prevents its being raised from the bed.

Seated upon and concentric with the disk D is a similar disk, E, the under side of which, instead of the upper, is beveled or inclined, as shown in Figs. 1 and 2.

Rising from the center of the disk E, the upper face of which occupies a true horizontal position when the instrument is properly adjusted, is a vertical stem or pedestal, *c*, which forms an axis for the depending tube or sleeve *d* of the instrument, and about which the latter may be rotated at will.

From the lower face of the disk E there projects a central stem or stud, *e*, the axis of which is at a right angle to the lower face of said disk, the end of said stem being threaded, as shown in Fig. 2, to receive a clamping-nut, F, by turning which the plates or disks may be firmly locked together.

Under the above construction, it will be seen that the rotation of either of the disks will cause the pedestal *c* to be carried in the direction of the point to which the thin edge of said disk is turned, while, if the two disks be so turned as to bring their thin edges opposite or over each other, this effect will be doubled, and in this way a very wide movement of the pedestal in such direction may be obtained. Ordinarily, however, one disk serves to straighten or adjust the instrument in one direction, and the other to adjust or straighten the same in a direction substantially at right angles thereto, each disk being furnished with handles *g*, by which to turn them.

For the purpose of securing the instrument upon the bed, and also to provide a means of locking the plates together, a thumb-nut, F, is placed upon the lower threaded end of the stem or axis *e f*, by turning which the disks are drawn closely and firmly together, preventing their turning independently of each other, and, as the lower disk is secured to the bed-plate C, as before described, preventing the instrument from moving. It will be observed that by this arrangement the clamping is effected at the vertical center of the pedestal or axis *c*, and that consequently no interference with the adjustment of the instrument is occasioned by the clamping of the same.

It is apparent that the details of construction may be somewhat modified—as, for instance, by forming the stem or axis *e* upon the lower plate instead of the upper; by using an eccentric instead of a nut to draw the disks together, and in other minor respects.

It is also obvious that any desired number of disks may be employed, in order to give a wide range of adjustment, and that they may be used either in connection with or independently of the usual screw-stems.

The devices for controlling the horizontal adjustments of the instrument about its vertical axis are omitted from the drawings in order to show the invention more clearly.

Having thus described my invention, what I claim is—

1. The combination of a stand or support, a transit or analogous instrument thereon, and two intermediate beveled plates capable of being rotated independently of the stand and instrument, and also of each other.

2. In combination with a transit, compass, or similar instrument, two beveled disks, arranged to sustain the same, substantially as shown.

3. The combination of a transit or other instrument with two beveled supporting-plates and a clamping device to secure the plates, substantially as described and shown.

4. The combination of a transit or similar instrument, a base or support, two intermediate inclined or beveled surfaces adapted to rotate one upon the other, and a central spindle provided with a clamping device, and serving the double purpose of an axis of rotation and of fastening the parts rigidly when adjusted.

5. The combination of the base B, rotary plates D and E, with inclined faces, and instrument A, mounted and arranged to rotate on plate or disk E.

6. A transit or other instrument, two rotary inclined supporting and adjusting surfaces, and means for locking the same together when adjusted, all arranged to rotate horizontally together upon a base or support, substantially as shown.

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